

**APPENDIX E**  
**COMMENTS ON**  
**THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S**  
**PROPOSED MONITORING STRATEGY FOR FINE PARTICULATE MATTER**

**SUMMARY**

The U.S. Environmental Protection Agency (U.S. EPA) has proposed detailed requirements for fine particulate matter (PM<sub>2.5</sub>) air quality monitoring. The intent of the proposed requirements is to establish a PM<sub>2.5</sub> monitoring network that would produce air quality data for the purpose of comparison to the proposed PM<sub>2.5</sub> standards. The proposed PM<sub>2.5</sub> monitoring requirements introduce unnecessary complexity and are overly specific regarding network design, monitor siting, sampling frequency, and spatial averaging. Because of differences in the nature of PM<sub>2.5</sub> pollution across the country, a “one size fits all” approach to network design will not work. *U.S. EPA should provide state and local agencies with more flexibility to plan and implement a monitoring network that collects sufficient information and, at the same time, conserves monitoring resources.*

New PM<sub>2.5</sub> monitoring networks that comply with U.S. EPA’s proposed requirements will be costly. Although the State’s existing PM<sub>2.5</sub> monitors give California an advantage by providing substantial data on the nature and location of fine particulate pollution, these monitors would not meet the proposed technical specifications. So, like other states, California will have to create a new PM<sub>2.5</sub> monitoring network from the ground up. *U.S. EPA should provide adequate resources to implement a new monitoring network for PM<sub>2.5</sub>, including one-time funding to procure the sampling, calibration, laboratory, and audit equipment, plus annual funding to support field and laboratory operations.*

In the remainder of this appendix, we present our comments on the monitoring strategy in greater detail. These comments are divided into two sections: the first addresses the need for more flexibility, and the second addresses the need for appropriate funding.

**FLEXIBILITY**

The proposed PM<sub>2.5</sub> monitoring requirements introduce unnecessary complexity and are overly specific regarding network design, monitor siting, sampling frequency, and spatial averaging. State and local agencies need more flexibility to plan and implement a monitoring network that collects sufficient information and, at the same time, conserves monitoring resources. PM<sub>2.5</sub> concentrations show significant regional and seasonal variation in California, and the nature of the PM<sub>2.5</sub> problem in California is different than in much of the U.S. California has a complex mix of sources, topography, and seasonal variability. Nitrates and organic particulates contribute much more to the PM air quality problem in California than in the

eastern U.S. Because of these differences in the nature of PM2.5 pollution across the country, a “one size fits all” approach to network design will not work.

*Note: This appendix includes a discussion on the technical issues associated with spatial averaging, without addressing the suitability of this approach. See the appendix on the proposed particulate matter standards for our comments on the concept.*

**Allow states like California with an existing PM2.5 database to develop an alternative monitoring plan.**

California has operated a dichotomous sampler PM2.5 network at about 20 sites for over seven years. These data can be used in determining how best to deploy monitoring resources, in terms of monitoring locations, monitoring planning areas, and sampling frequency. They provide California sufficient information about the spatial and seasonal distribution of PM2.5 to develop an alternative monitoring plan that would be specific to our PM2.5 problem. An alternative plan would also allow California to take into account state-specific monitoring objectives, e.g., accounting for varying conditions in different parts of the state, the significant contribution of nitrates in California and the significant spatial variation of PM2.5 concentrations within many urban areas in California.

**Allow all state and local agencies sufficient flexibility in network design and monitor siting.**

- a) The proposed requirements are overly specific with regard to network design and monitor siting. They would require states to establish artificially defined constructs -- Monitoring Planning Areas and Spatial Averaging Zones -- to implement population-oriented, spatial averaged monitoring. The monitoring sites would have to be specially coded for the purpose of comparison to the standards. These concepts may actually hinder the planning process by introducing unnecessary complexity into network design, monitor siting, data reporting, and assessment of violations. States should be given broad guidelines only on where to locate their monitors and then be allowed flexibility in planning the network. For example, simply require a number of monitors based on the population in an area and then include a general requirement to cover smaller, rural areas. Let the state and local agencies determine how best to deploy the monitors, without specifying Monitoring Planning Areas and Spatial Averaging Zones. Another suggestion for how to simplify the regulations would be to simply require that attainment designations be based on monitoring at the location of expected high ambient concentrations. The proposed requirements are too complex.
- b) Adoption of spatial averaging for an annual PM2.5 standard would require the addition of significantly more monitoring sites than would be required if measurements from individual monitors are compared to the standard. In the western U.S., ambient PM2.5 concentrations can vary tremendously from place to place, even throughout an urban area. Because of this, a number of Spatial Averaging Zones, each with at least one monitor,

may be required in each of a number of California urban areas.

- c) State planning and regulatory frameworks (such as California air basins) should be used as a framework in designating areas for PM<sub>2.5</sub>, with states allowed flexibility in proposing smaller areas.
- d) If the requirement to establish Monitoring Planning Areas is not dropped, states should be given flexibility in defining the boundaries of Monitoring Planning Areas and consider when it is appropriate to incorporate a Metropolitan Statistical Area in whole or in part into the Monitoring Planning Area. In California, for example, some Metropolitan Statistical Areas encompass regions that are diverse geographically and in emission sources. Portions of one Metropolitan Statistical Area may also be located in different air basins or political jurisdictions and have different sets of air quality problems. It would be impractical to determine Monitoring Planning Areas based strictly on Metropolitan Statistical Areas. Other information, including topography, PM emission information, and the number and type of significant PM sources, should be recognized as equally important in determining the number of Monitoring Planning Areas and their boundaries.
- e) If the concept of spatial averaging zones is not dropped, at least the requirement that the spatial averaging zones in Metropolitan Statistical Areas have to completely cover the entire Monitoring Planning Areas should be dropped. In the western U.S., ambient PM<sub>2.5</sub> concentrations can vary tremendously from place to place even throughout an urban area. Metropolitan Statistical Areas can include extensive rural areas with little population.
- f) Allow an exemption from monitoring for PM<sub>2.5</sub> at Photochemical Assessment Monitoring Station sites where the ozone and PM seasons do not coincide. Throughout most of California, the ozone season runs from the late spring through the early fall, when the PM concentrations are lower than at other times of the year. The Photochemical Assessment Monitoring Station sites were not selected with PM<sub>2.5</sub> monitoring in mind.

**Allow sufficient flexibility in the operating schedule.**

- a) Replace the requirement for everyday sampling with the following: Everyday sampling would be contingent upon the availability of a completely field-tested reference or equivalent method that is accurate and able to operate on consecutive days, and on the availability of sufficient federal funding. Such field-tested samplers should be available before the everyday sampling is required to prevent having to put together a series of one day samplers to satisfy the daily sampling requirements. Until these conditions are met, only less frequent sampling should be required.

Once a proven sampler and sufficient funding are available, everyday sampling seems appropriate but only at a limited number of "KEY" locations that are likely to be high sites for an area and only during seasons when high values are likely. All other sites should be allowed to sample less frequently as determined to be appropriate in each state's monitoring plan. The everyday sampling at the limited number of high sites will determine the key 24-hour values needed for designation and planning purposes.

Everyday sampling is appropriate during planned epidemiological studies for which U.S. EPA provides adequate funding to cover all monitoring and sample analysis costs.

b) Allow exceptions to everyday sampling in the following cases:

- Where there is an existing PM2.5 database that demonstrates that the site is not a "KEY" site or that the season is not a high season. Except for key sites during the high season, all other sites should be allowed to sample less frequently.
- At a background site where an ocean is the background, as is the case for the western coastal states.

### **Implementation Schedule**

The proposed requirements would be phased-in over three years. During the first year, a minimum of one Monitoring Planning Area per state would have to be completed. Instead, the requirement should call for one Core monitor in each of a few geographically diverse areas per state. This would offer broader geographical coverage. Allocating the resources throughout the state would be easier. Testing new equipment and new Reference Equivalent Methods in different locations would provide us with more valuable information than would be the case from one Monitoring Planning Area.

### **Annual Report**

The annual PM2.5 network report should be incorporated into the existing requirement for an annual report on the National Air Monitoring Station and State and Local Air Monitoring Station networks.

### **FUNDING**

The proposed monitoring program would be quite resource intensive. An assurance that adequate federal funding will be provided and that the federal funding will be with additional dollars needs to be linked to these requirements. Scaling down the existing PM10 network in California and redirecting resources to PM2.5 monitoring should not be assumed because the federal standard will require maintaining the majority of existing PM10 monitors. Due to the

localized nature of PM10 in California, we would not be able to greatly reduce the number of monitors and still collect sufficient data for comparison to the federal PM10 standard. U.S. EPA should work closely with state and local agencies to develop realistic cost estimates and then secure new funding for this new regulation.

In September 1996, U.S. EPA distributed a proposal entitled, "Re-Engineering of Air Quality Monitors -- Strawman Recommendations." This document recommends funding most of the PM2.5 monitoring network with funds redirected from existing air monitoring programs. While the Air Resources Board supports scaling down some monitoring programs (TSP and lead for instance), we believe the Strawman Recommendations are overly optimistic with regards to recovering funds for redirection.

Within California, state and local agencies operate 166 PM10 monitors and less than half of these (about 75) are located in areas that receive Section 105 grants. Many of these monitors were purchased with local funds, and consequently, there would be little benefit to redirecting 105 funds from PM10 to PM2.5 monitoring.

The Strawman Recommendation also forecasts savings through optimization of the Photochemical Assessment Monitoring Station network, but overlooks the fact that the California Photochemical Assessment Monitoring Station program was optimized at the outset through the development of the California Alternative Photochemical Assessment Monitoring Station Plan. Consequently, redirection of Photochemical Assessment Monitoring Station funding to PM2.5 monitoring would also be of little benefit.

With minimal funding available, U.S. EPA should work closely with state and local agencies to develop realistic cost estimates and then secure new funding for this new regulation. Listed below are some of the expenses for which resources will need to be allocated.

- Initial start-up expenses will include the following: purchase of samplers, single-day and multi-day; purchase of spare parts; site upgrades such as rooftop platforms, power, etc.; purchase of calibration equipment; purchase of audit equipment; purchase of laboratory equipment; and acceptance testing.
- Annual expenses will include the following: field servicing of filters; equipment maintenance; laboratory operations; field audits; site lease payments; and purchase of filters.

The best utilization of these resources can be achieved by allowing flexibility in network design, reasonable exemptions to everyday sampling, and easing quality control requirements.